

Appl. No. 09/927,244
Amdt. dated September 16, 2003
Reply to Office Action of 06/16/03

PATENT

REMARKS

Claims 1-7 are pending in the instant application. Claim 15 is canceled without prejudice to its patentability. Claims 1 and 3-6 have been amended.

Applicant's provisional oral election of Group I claims 1-7 is hereby affirmed without traverse. Accordingly, claim 15 has been canceled without prejudice to filing of divisional applications directed thereto.

The Examiner had rejected claim 3 as indefinite under 35 U.S.C. 112, second paragraph. Claim 3 has now been amended to overcome this rejection. Specifically, at the request of the Examiner, the term "comprising" has now been replaced with "consisting of".

Embodiments in accordance with the present invention relate to corrosion resistant coatings on components of semiconductor fabrication tools, and in particular to rare earth-containing coatings formed over a separate adhesion layer that in turn overlies a parent material such as a ceramic:

1. A substrate processing chamber having at least one component bearing a rare earth-containing coating bound to a parent material by an intervening oxide adhesion layer, such that the component exhibits resistance to etching in a plasma environment. (Emphasis added)

In certain embodiments, the adhesion layer may be formed from a deposited rare earth-containing oxide material that is driven into the parent material by ion bombardment. (See page 12, lines 23-25). Claims 1, 5, and 6 have now been amended to recite an adhesion layer formed from a rare earth-containing oxide.

In the latest office action, the Examiner rejected claims 1-4 and 7 as anticipated under 35 U.S.C. 102(b) by Japanese Patent Application No. Hei 10[1998]-45467 to Itou ("the Itou application"). These claim rejections are overcome as follows.

As a threshold matter, the Examiner is reminded that the pending claims are rejected as anticipated, and not merely obvious, in light of the Itou application:

[t]he distinction between rejections based on 35 U.S.C. 102 and those based on 35 U.S.C. 103 should be kept in mind. Under the former, the claim is anticipated by the reference. No question of obviousness is

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present. In other words, for anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present. (Emphasis added; MPEP 706.02)

Like the instant application, the Itou application relates to formation of corrosion-resistant coatings on semiconductor fabrication equipment. In rejecting certain of the pending claims, the Examiner stated that the Itou application:

shows the invention as claimed including a material for a wall of a plasma substrate processing chamber . . . bearing a rare earth-containing coating bound to a parent material of alumina or AlN . . . by an intervening adhesion layer comprising a rare earth oxide (see paragraph 0016). . .
(Office Action Mailed June 16, 2003, pp. 3-4)

Applicants have now obtained an English language translation of the entire Itou application. A copy of this translation is submitted herewith for review by the Examiner. Paragraph 16 of this translation reads as follows:

[0016]

It is desired to use multiple oxides consisting of crystalline substances, especially those consisting of silicate compounds such as garnet type crystals, e.g. YAG ($3Y_2O_3 \cdot 5Al_2O_3$), etc., monoclinic crystals, e.g. YAM ($2Y_2O_3 \cdot Al_2O_3$), etc., perovskite type crystals, e.g. YAP ($Y_2O_3 \cdot Al_2O_3$), etc., monosilicates ($Y_2O_3 \cdot SiO_2$), and so forth due to excellent corrosion resistance. Of these, garnet type crystals and disilicate crystals are most desirable due to sinterability and low production cost.

This passage relied upon by the Examiner describes only the corrosion-resistant coating itself, rather than an adhesion layer intervening between the coating and a parent material, as is recited in the pending claims. Nowhere does ¶16, or any other portion of the Itou application, teach or even suggest such a separate intervening layer promoting adhesion between a rare earth-containing coating and an underlying parent material.

Because the Itou application reference relied upon by the Examiner fails to disclose every aspect of the pending claims, it is respectfully asserted that the claims are not anticipated by this reference. Any continued rejection of the claims as anticipated based on this reference improper, and the rejections should be withdrawn.

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The Examiner has also rejected claims 1-7 as anticipated under 35 U.S.C. 102(e) by U.S. patent no. 6,432,256 to Raoux et al. ("the Raoux patent"). These claim rejections are overcome as follows.

Like the instant application, the Raoux patent relates to methods for forming corrosion-resistant coatings for components of semiconductor fabrication tools. Unlike the pending claims, however, the Raoux patent describes the introduction of rare earth metals to form only corrosion resistant rare earth:fluoride compounds:

the ceramic parts are implanted with rare-earth ions using an implantation technique based on a metal vapor vacuum arc (MEVVA™) ion source. The implanted ions are then reacted with fluorine radicals in a highly corrosive environment to form a layer of rare-earth fluoride material, RE:F₃, at the surface of the ceramic component. (Emphasis added; Abstract)

Nowhere does the Raoux patent teach, or even suggest, a rare earth-containing oxide layer intervening between a corrosion-resistant coating and an underlying parent material to promote adhesion between these layers.

Because the Raoux patent reference relied upon by the Examiner fails to disclose every aspect of the pending claims, it is respectfully asserted that continued rejection of the claims based upon this reference is improper, and the rejections should be withdrawn.

Based upon the above amendments and remarks, it is respectfully asserted that pending claims 1-7 are in condition for allowance. Reexamination of the pending claims and prompt issuance of a notice of allowance to that effect is therefore respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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